Realising the richness of psychology theory in contingency-based management accounting research

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Abstract

Psychology theory has been employed extensively in contingency-based management accounting research, but there has been little consideration of how it could be utilised more fruitfully. After analysing prior research, particularly studies published in *Management Accounting Research,* I identify and discuss five ways to develop the use of psychology theory in contingency-based management accounting research: (1) stronger linkages between individual and organisational-level studies, (2) a more dynamic perspective on relations between management accounting practices and psychological processes, (3) greater use of field studies in contrast to surveys, (4) examination of the interdependencies between management accounting practices and other types of information, and (5) a greater focus on the role of emotions.

1. Introduction

Contingency-based management accounting research has a long and distinguished history of providing insights into the role and functioning of management accounting practices in organisations. Whilst its shortcomings have been the subject of considerable debate (e.g., Otley, 1980; Chapman, 1997; Hartmann and Moers, 1999; Gerdin and Greve, 2004); it remains an important and central field of inquiry in management accounting research. For example, Chenhall's (2003) review of contingency research in management accounting and control still remains one of the most downloaded articles in *Accounting, Organizations and Society,* 13 years after its initial publication.

I use the term 'contingency-based' research rather than 'contingency theory' to distinguish between a contingency approach to management accounting research and the precise theory(ies) mobilised in a particular study. That is, a contingency orientation is an approach to management accounting research that seeks to understand how the operation and effects of management accounting practices are not 'universal' - they depend on the different contexts within which those practices operate.[1] Within this approach, particular theory(ies) can be used to provide predictions and/or explanations for expected and/or observed relationships, such as theories from economics, psychology or sociology, or a combination thereof (see Chenhall, 2007).

My focus is on the use of psychology theory in contingency-based management accounting research, which has long been used to study management accounting practices (Argyris, 1953; Birnberg et al., 2007). Psychology theory is focused on explaining and predicting behaviour by examining primarily individual rather than organizational and social behaviour, and subjective rather than objective phenomena (Birnberg at al., 2007). As such, psychology theory can be used within contingency based management accounting research in order to understand and explain the operation and effects of management accounting practices through consideration of how they influence *individuals'* mental states and behaviours. To do so, studies can draw

[1] See Gerdin and Greve (2004) for an excellent review of the different forms of fit in contingency research, and Gerdin and Greve (2008), Grabner and Moers (2013), and Burkert et al. (2014) for a discussion of different forms of fit and appropriate statistical methods.

on a variety of psychology theories from cognitive, motivational and social psychology (Birnberg et al., 2007). For example, Franco-Santos et al. (2012) identify several psychology theories used to understand the effects of contemporary performance measurement systems, such as information processing, goal setting and justice theories.

My first aim is to analyse the ways in which psychology theory has been employed in prior contingency-based management accounting research, particularly its (as will be argued, often implicit) role in developing predictions and/or explanations for the effects of management accounting practices on individual and/or organisational outcomes. To fulfil this aim I draw selectively on a variety of studies to illustrate the role of psychology theory in contingency-based research, particularly those published in *Management Accounting Research*.[2] I focus particular attention on the classical budgeting studies, such as Argyris (1952) and Hopwood (1973), which provide compelling (but under explored) insights into the richness of psychology theory for contingency-based management accounting research.[3] I analyse studies conducted at the individual level of analysis (section 2), followed by studies at the organizational level (section 3). This separation is for ease of exposition, but it also reflects the focus in existing research on conducting studies at the individual or organizational level of analysis. This analysis is important because although psychology theory has been employed extensively in contingency-based management accounting research, there has been little consideration of how it could be utilised more fruitfully. A focus on the use of psychology theory also complements studies examining the use of specific theories and ways of theorising in contingency research in management accounting more broadly (e.g., Chapman, 1997; Hartmann, 2000; Gerdin and Greve, 2004).

Drawing on this analysis of prior studies, my second aim is to identify and discuss five ways to develop the use of psychology theory in contingency-based

[2] For reviews and discussion of contingency research in management accounting more broadly, see, for example, Chapman (1997), Hartmann (2000), Chenhall (2003), and Otley (2015). For excellent overviews of the use of psychology theory in management accounting research, see Birnberg et al. (2007) and Luft and Shields (2009).

[3] This points to the continued richness of pioneering studies and the opportunities for current research that can be created from revisiting them. For similar approaches, see Chapman (1997), who re-examined the classic early contingency studies, and Hall (2010), who re-examined studies of accounting information in managerial work.

management accounting research. I first focus on developing stronger linkages between individual and organisational-level studies (section 4). This includes the need for organisational level studies to be more explicit about the psychological processes that are expected to generate the organisational-level effects of management accounting practices, the importance of examining whether and how individual-level effects of management accounting translate into effects at the organisational level, and a stronger use of multi-level studies. Section 5 advocates a more dynamic perspective on relations between management accounting practices and psychological processes. This would include a stronger focus on the abilities, judgements, and motivations of individuals who take (or not) actions in order to achieve an appropriate fit between the organisational context and management accounting practices. In contrast to the predominate use of surveys, in Section 6 I propose a greater use of field studies in contingency-based management accounting research because they can provide more scope to analyse a broader range of psychological processes (rather than only psychological states). Section 7 considers the importance of examining the wider information environment within which management accounting practices operate. This is particularly pertinent where interdependencies between a particular management accounting practice and other management accounting practices and/or other types of information can interact to influence individual's psychological responses. The final approach I outline concerns expanding the range of psychology theories used in understanding the operation of management accounting practices in organisations (section 8). Specifically, I argue for a greater focus on the role of emotions, which would include considering how management accounting practices can create and reinforce emotional responses, and how existing emotions and feelings of individuals in organisations can be expressed through management accounting practices. The final section, section 9, concludes the paper.

2. Understanding the effects of management accounting practices at the individual level of analysis

Studies have sought to understand and explain the individual-level effects of management accounting practices. This has involved an evolution from examining direct links between management accounting practice(s) and individual-level effects to analysis of contingency relationships, such as how direct links can occur in some contexts but not others, and/or will occur to a different extent or in indirect ways through particular psychological mechanisms. This typically involves the development of theoretical models involving intervening and/or moderator variables. In an intervening variable model, the management accounting variable affects a psychological variable, and the psychological variable in turn affects the individual-level outcome (Luft and Shields, 2000). For example, participative budgeting affects role ambiguity, and role ambiguity in turn affects job performance (Chenhall and Brownell, 1988). In a moderator variable model, how much the management accounting variable affects the individual-level outcome is conditional on the value of the psychological variable (Luft and Shields, 2000). For example, how participative budgeting influences managerial performance is conditional on a manager's perceived locus of control (such as whether a manager believes his/her destiny is controlled by luck or the manager's own actions) (Brownell, 1981).

Argyris's (1953; 97) pioneering study addressed fundamental questions concerning the role of budgets in organisations, such as 'what are the effects of budgets on the human relationships in the organization?'. As noted by Birnberg et al (2007), Argyris (1952) is the first study to draw on psychology theory to study management accounting, particularly concepts from human relations and group dynamics. Findings of his study drawn from interviews at three production plants focused on how budgets related to employees' motivation and social relations, particularly focused on pressure, stress and tension created by the use of budgets in performance evaluation processes. Psychology theory was used to understand and explain the reactions of employees to the budgeting process, such as the creation of groups to relieve pressure, a range of behaviours in response to failure to achieve a budget target, and all manner of conflicts

between employees and between employees and supervisors. Other early research on budgeting also drew on psychology theory (specifically, level of aspiration theory), such as Stedry's (1960) examination of how budget goal difficulty (easy, medium or difficult goals) and the timing of budget goals (whether the individual receives the budget goal before or after setting their personal aspiration level) interacted to influence performance.

Hopwood's (1973; see also 1972; 1974) seminal work also drew strongly on psychology theory, particularly the use of role theory, to examine the effects of different styles of use of accounting information in the performance evaluation of cost centre managers. Drawing on interview and survey data, he found that a manager who perceives he is evaluated under a budget constrained style (in contrast to a profit conscious or non-accounting style) will report higher job related tensions, have poorer relations with superiors and peers, and be more likely to falsify accounting records and engage in dysfunctional decision making.[4] As noted by Birnberg et al. (2007), many later studies in management accounting drew on role theory to examine how role ambiguity and role conflict mediate the effects of management accounting practices on various outcomes like stress and job performance.

Hopwood (1973) argued that strong reliance on accounting information for performance evaluation in the setting of cost centre managers would result in an incomplete evaluation of managerial performance. As such, Otley (1978; 123) specifically chose an organizational setting 'that was well suited for the application of budgetary control', particularly where accounting measures of performance provided a more complete evaluation of managerial performance. Drawing on interview, survey and documentary evidence, Otley found that a budget-constrained style of performance evaluation was not associated with higher levels of job tension or lower levels of role ambiguity. The differing results of the two studies are often taken to be related to the different

[4] Hopwood (1973; 19) defined a budget-constrained style as performance evaluation primarily based on the manager's ability to meet short-term budgets, which is stressed at the expense of other values and important criteria, whereby a manager will receive an unfavourable evaluation if his costs exceed the budgeted costs regardless of other considerations. A profit conscious style was defined as evaluation based on a manager's ability to increase the general effectiveness of his operations in relation to the longer-term purposes of the organization. The accounting reports are useful but are used with some care in a rather flexible manner.

organizational units (cost versus profit centres), spawning many studies examining a variety of contingency variables such as characteristics of national culture, environment, strategy, and tasks (see Hartmann, 2000 for a review of this extensive and important literature).

Related research examined how the effect of budgets would depend on the way they were prepared, particularly the extent to which subordinates were involved in the budget setting process. For example, early studies by Hofstede (1967) and Milani (1975) adopted a behavioural perspective to explain the effects arising from subordinates' participation in the budgeting process, for example, through effects on levels of motivation, job satisfaction and attitudes towards the job and organisation. Subsequent research drew on psychology theory to develop explicit contingency arguments about how the effects of budgetary participation are conditional on a variety of personal characteristics, for example, locus of control (Brownell, 1981) or authoritarianism (Chenhall, 1986). Research also examined how the effects of participative budgeting were indirect through mediating variables such as organisational commitment (Nouri and Parker, 1998) and role ambiguity (Chenhall and Brownell, 1988). More recent research has drawn on advances in motivational theory to examine how budget participation is related to different forms of motivation (Wong-On-Wing, Guo and Lui, 2010; De Baerdemaeker and Bruggeman, 2015).

Other research has sought to broaden the focus of this long line of budgeting studies. For example, Marginson and Ogden (2005) draw on role theory to examine the potential for budgetary targets to have a positive (rather than negative) impact on managers' budgeting behaviours, and show how individuals commit to meeting pre-determined budget targets because they can offer structure and certainty in situations of high ambiguity. Extending work on the styles of budget use, Chong and Mahama (2014) examine the effects of the diagnostic and interactive use of budgets on team level motivation and performance. They predict and find that interactive use of budgets is positively associated with team self efficacy, which, in turn, is positively associated with team effectiveness.

As one the key aspects of evaluation is the controllability principle, studies have drawn on psychology theory to understand the processes through

which it influences individual behaviour. For example, Giraud et al. (2008) draw on justice theory to propose that the presence of uncontrollable items in a manager's performance assessment generates perceptions the evaluation process is unfair as it violates principles of equity. This unfairness perception can generate a range of dysfunctional behaviours such as manipulating data (Hopwood, 1973). Burkert et al. (2011) draw on role theory and find as predicted that the application of the controllability principle is negatively associated with role ambiguity and role conflict.

Beyond the budgeting context, studies have used a variety of psychology theories to inform understanding of how and why performance measurement systems influence individual behaviour. In an experimental study, Webb (2004) draws on goal setting theory to examine how the perceived strength of the cause-effect link between nonfinancial and financial measures in a strategic performance measurement system affected individuals' commitment to financial and nonfinancial goals. He predicted and found that a strong cause-effect link generated higher commitment to financial goals (fully mediated by financial goal self-efficacy) and higher commitment to nonfinancial goals (partially mediated by nonfinancial goal attractiveness). Burney and Widener (2007) draw on role theory to predict and find that a more strategic performance measurement system was negatively associated with role ambiguity (partially mediated by job-relevant information), which, in turn, was negatively associated with manager performance. In a related study, Burney et al. (2009) draw on justice theory to predict and find that two characteristics of an incentive plan (the extent to which it is perceived as reflective of a strategic causal model, and the degree of technical validity) influenced in-role and extra-role performance, mediated by both distributive and procedural justice. Hall (2008; 2011) draws on role, cognitive and motivational theories to examine how a comprehensive performance measurement system is related to managerial performance. He predicts and finds that a comprehensive performance measurement system is positively associated with goal and process clarity, with the four dimensions of psychological empowerment, and with mental model confirmation and mental model building (but only for those managers in smaller-sized business units), with varying links between these psychological variables and managerial

performance. Rather than focus on the design characteristics of performance measure and incentives, Marginson et al. (2014) examine the effects from the diagnostic and/or interactive use of performance measures. They find, as predicted, that diagnostic use of performance measures is negatively associated with role ambiguity, and interactive use of performance measures is positively associated with three of the four dimensions of psychological empowerment.

Overall, a range of psychology theories have been used to explain the effects of a variety of management accounting practices (e.g., budgeting, performance evaluation, incentive schemes, performance measurement systems) and characteristics therein (e.g., participation, controllability, strategic and cause-effect linkages, technical validity, comprehensiveness) on individual behaviour and performance (or related outcome variables). A particular feature of more recent research is the attempt to trace the psychological states through which management accounting practices are expected to influence individual behaviours. As noted by Birnberg et al. (2007), this helps to test theory in a more detailed way by explicitly representing and measuring at least some of the mental states in the causal process leading from management accounting practices to their effects. Another feature of these studies has been to examine the effect of the information characteristics of management accounting practices, such as cause-effect linkages, strategic linkages, technical validity and comprehensiveness (Webb, 2004; Burney and Widener, 2007; Burney et al., 2009; Hall, 2008) rather than, for example, using simple lists of financial and nonfinancial measures (e.g., Hoque and James, 2000). Although the early research on budgeting prompted a series of studies examining how the impact of budgets on individual outcomes may vary in different settings, studies of more contemporary management accounting practices at the individual level have yet to be developed into explicit contingency frameworks. Finally, although early research often employed a mixed method approach including the use of interviews and documents (e.g., Argyris, Hopwood and Otley), subsequent studies have typically employed a single method approach, focused primarily on survey, archival or experimental methods of data collection.

3. Understanding the effects of management accounting practices at the organisational-level of analysis

Studies often employ psychology theory (implicitly or explicitly) to motivate hypotheses about the effects of management accounting practices at the organizational level (or any non-individual level, such as department or business unit). These studies typically examine organizational performance as the dependent variable (Gerdin and Greve, 2004). This is not surprising as the role of psychology theory in organisational-level contingency based research is to provide a theoretical explanation for why certain combinations of context and management accounting would affect organizational performance via their influence on the actions of individuals.

Building on the initial studies of budgeting at the individual level of analysis, research expanded its focus to examine the effects of budgeting at the subunit and organisational level. For example, Govindarajan and Gupta (1985) examine relations between strategic business unit strategy, reliance on accounting performance measures and strategic business unit effectiveness. Their propositions are motivated with reference to the literature examining the 'behavioral effects of incentive mechanisms on individual motivation and task performance' (p.53), thus theorising effects at the strategic business unit level of analysis using individual-level psychological processes. Perera et al. (1997) use a similar approach in developing the expectation that the increasing use of non-financial performance measures is associated with enhanced performance for firms pursuing customer-focus in manufacturing strategy. Although not drawing explicitly on any particular psychology theory, they argue that nonfinancial measures are important in generating and directing managerial actions towards the attainment of strategic priorities, thus implicitly drawing on motivational processes, particularly the arousal and direction of effort. Their arguments (again, implicit) also draw on cognitive processes whereby appropriate performance measures are expected to enhance performance because they provide managers with relevant and specific feedback on the relevant strategic dimensions, thus seeking to enhance their decision making (cognitive) processes.

In a similar vein, other research has drawn on various psychological processes to examine links between more contemporary business processes and management accounting practices. For example, Ittner and Larcker (1995) focused on relations between total quality management, non-traditional information and reward systems and organisation performance. They draw (implicitly) on arguments from several psychology theories to motivate their hypotheses, such as learning, goal setting, and motivational processes. Similarly, Chenhall (1997) draws (also implicitly) on a variety of psychology theories to motivate expectations regarding relations between total quality management, reliance on manufacturing performance measures and organizational profitability, including discussion of goal setting, learning and motivational processes. Davis and Albright (2004), in a study of a bank, argued that bank branches with a balanced scorecard are expected to have higher performance because it improves employee understanding of how their performance on various measures affects organizational performance, thus invoking arguments about mental processes involving an improvement in employees' knowledge. Using a similar approach, Dossi and Patelli (2008) examine how characteristics of a performance measurement system influence the extent to which it is used to influence subsidiary decisions. For example, subsidiary participation in the design of performance measurement systems is expected to increase the extent to which it influences subsidiary decisions via enhanced motivation, and the diversity of a performance measurement system is expected to increase subsidiary managers understanding (knowledge) of the relationship between strategic objectives.

Some organisational-level studies are more explicit in their use of psychology theory to generate expectations. For example, Widener (2006) drew on equity theory to motivate expectations about the effect of hierarchical versus egalitarian pay structures on the relation between non-financial and human resource measures in bonus compensation and reliance on human capital. Using a similar approach, Bisbe and Malagueno (2012) examine the effect of strategic performance measurement systems on organizational performance via strategy reformulation (with environmental dynamism as a moderator). They draw explicitly on psychology theory to motivate the expectation that strategic

performance measurement system is positively associated with the comprehensiveness of strategic decision arrays resulting from a strategy (re)formulation process, particularly the way in which management accounting influences the mental representations of senior managers involved in the strategic process.

Overall, at the organizational level of analysis, psychology theory has been used to explain the effects of management accounting practices on organizational (subunit) performance (or related outcome variables). The use of psychology theory in organizational level studies varies considerably, ranging from some explicit use of specific psychology theories, to the (more typical) use of a diverse range of ideas and findings (not theories) from different psychological perspectives, such as motivational and cognitive psychology. A prominent feature of organisational-level studies is the lack of explicit attempts to theorise the psychological processes through which management accounting practices are expected to influence individual behaviours (and how these psychological processes are likely to be different under varying contextual conditions), and, in turn, how individual behaviours are expected to combine to influence organizational-level outcomes such as organisational performance. In this way, organisational level studies typically have no clearly specified causal mechanism regarding the explicit set of individual actions and interpretations leading from management accounting practices to organisational-level effects, such as consideration of who does what and what motivation and reasoning causes them to do it (Luft and Shields, 2003). In addition, although these studies rely on arguments about individual-level mental processes, studies typically do not provide empirical evidence to support the existence of these processes forming the basis for the hypotheses. Finally, studies have predominately if not exclusively tended to employ survey and archival methods of data collection and analysis.

4. Developing stronger linkages between individual and organisational-level studies

As noted, studies at the individual level of analysis have focused on specifying and testing the psychological processes leading from management accounting practices to their individual effects. But there has been less focus on whether and how individual level effects relate to effects at the subunit and/or organisational level (Luft and Shields, 2003). This is important because the management accounting practices typically examined in these studies are organisational-level phenomena, such as budgets and performance measurement systems. As such, it is clearly of interest how these management accounting practices influence organisational processes and outcomes, not only those at the individual level. For example, it is not clear from prior studies whether the individual level outcomes from comprehensive or strategic performance measurement systems (e.g., Webb, 2004; Hall, 2008; Burney and Widener, 2007) translate into effects at the organisational level. In addition, studies have focused less attention on how psychological processes can vary in different contextual conditions, not only under different individual-level characteristics (such as different experience, expertise, and personality, for example) but also in the different contexts within which individuals carry out their work. In contrast, organisational level studies typically examine contingency relationships, but often leave unspecified (or underspecified) the psychological processes through which organisational outcomes occur in these different settings. For example, studies linking contemporary performance measurement systems to organizational outcomes leave unexamined the black box that occurs between the use of such systems and firm performance (Burney and Widener, 2007).

Given this discussion there appears to be a strong case for developing greater linkages between individual and organizational-level studies. At the organisational level, such an approach would help to develop theory and test empirically the assumptions about individual level psychological processes and behaviours before seeking to examine higher-level outcomes. For example, as noted above, Davis and Albright (2004) argue for a direct link between the use of

a balanced scorecard and higher bank branch performance but do not specify the causal sequence through which use of the balanced scorecard actually generates higher branch performance. Importantly, this sequence is likely to be extremely long and consist of a variety of psychological processes. At a minimum, these processes could include individual employees receiving and interpreting the information from the balanced scorecard, the information generating a learning process where employees change their conception of how performance on various measures links to organizational performance, and a subsequent improvement in the actions or decisions of individual employees reflecting their enhanced understanding. Finally, the improved actions and decisions would need to be spread across a sufficient number of individual employees and be of sufficient strength such that collectively they combine to improve branch performance. This illustrative analysis suggests that organisational level contingency based studies drawing on psychology theory (or ideas) without theorising the casual sequence and/or without relying on prior empirical research conducted at the individual level of analysis are likely to be premature at best and potentially misleading at worst. This is because without examining such individual level effects it is difficult if not impossible to attribute organisational-level findings to particular psychological processes, and there may also be competing psychological processes creating offsetting effects at the organisational level. This approach would help studies to be more explicit and precise about the individual-level psychological processes that are expected to generate the organisational-level effects of management accounting practices.

But, as noted, individual-level studies would benefit from consideration of whether and how results translate into effects at the organisational level. They would also benefit from a more explicit contingency orientation in examining whether and how the observed relations are dependent on the presence or levels of other (unobserved) variables. For example, Franco-Santos et al. (2012) note that we still know little about the extent to which various individual and organisational characteristics affect the relations between contemporary performance measurement systems and relevant outcomes. Although some studies have examined the effect of individual-level characteristics, such as years of experience (Burney and Widener, 2007; Hall, 2011) and hierarchical level

(Burkert et al., 2011), it seems particularly fruitful to examine whether and how these relationships at the individual level are different depending on different organizational characteristics. Developing such expectations will require careful development of theory regarding how and why the relevant psychological processes generated by management accounting practices would occur differently in different contexts.

Developing stronger linkages between individual and organisational-level studies will also require careful attention to model forms and levels of analysis (see Luft and Shields, 2003). As noted, most existing studies focus on the effects of management accounting practices at either the individual or organisational level of analysis. For example, Figure 1, Panel A, shows a single-level model at the organizational level of analysis, where a contingency variable(s) and an organisational-level management accounting variable(s) interact to effect organisational outcome(s). Panel B shows an example of a single-level model at the individual level of analysis, where an individual-level management variable affects a certain psychological state (mediating variable), which, in turn, effects an individual outcome(s). However, developing stronger linkages between individual and organisational level studies requires consideration of cross-level models. Figure 1, Panel C, provides an illustration of the type of cross-level model that has received limited attention in prior research but could prove fruitful. The top-down arrow represents how organizational management accounting has a varying effect on individual outcomes because of some difference(s) in individuals that causes them to respond differently to the same management accounting information (see Luft and Shields, 2003; 197). For example, managers with more ability or knowledge may be able to use certain information provided by the organisation's management accounting system more effectively (and thus produce more desirable behaviours, actions or decisions) than managers with less ability or knowledge. The bottom-up arrow represents how individual behaviours, actions and/or decisions can have a varying effect on organizational outcomes because of differences in higher-level variables such as the organizational context (see Luft and Shields, 2003; 199). For example, certain behaviours, actions or decisions will produce higher organisational performance for organisations (or subunits) following a

prospector compared to a defender strategic orientation. Although more complex, the development of such cross-level models linking the organisational and individual levels of analysis seems a very promising avenue for advancing knowledge in psychology-based contingency research in management accounting. [5]

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5. Developing a dynamic perspective

Existing contingency-based management accounting research typically treats management accounting as a static phenomenon. Within this approach, the focus is on how and why a pre-existing management accounting practice has effects on individual and/or organizational level outcomes. In and of itself this is a worthwhile aim and many rich insights have been gained. But as Hopwood (1983; 289) notes, 'accounting is neither a static or homogenous phenomena. Over time, all forms of accounting have changed, repeatedly becoming what they were not.' In particular, understanding how 'fit' comes about through adapting management accounting practices to the organisational context is critically important, whether researchers are focused on continuous and incremental change or analysis of episodic and quantum changes (see Gerdin & Greve, 2004).[6] An emphasis on adaptation is also consistent with the core focus in contingency theory on how organisations adapt over time by changing structures in response to changing contingencies (Donaldson, 2001).[7]

Psychology theory is particularly well positioned to help understand the process through which management accounting practices are developed or changed, particularly in response to changes in the organisational context. This is important because when an organisation is in a state of misfit, managers cannot easily determine what changes are necessary to regain fit (Donaldson, 2001). For

[5] Thanks to Mike Shields for helping to develop Figure 1.
[6] The wider management accounting literature has focused extensively on issues of change and adaptation in management accounting practices (e.g., Burns and Scapens, 2000; Burns and Vaivio, 2001) but this is not typically pursued within a contingency-oriented perspective.
[7] In particular, see Donaldson's (2001) discussion of the structural adaptation to regain fit (SARFIT) model.

example, when an organisation grows in size, managers are unsure of how to avoid increasing formalisation too much or too little given they do not know the exact level of formalisation to fit the size of their organisation (Donaldson, 2001). This resonates with a psychology perspective because management accounting practices will be developed or changed not owing to (only) an objective change in organisational context, but by a change in individuals' mental representations of those change(s) (Luft and Shields, 2009), as well as whether those individuals possess the necessary motivation, knowledge and ability to enact those changes. Here, psychology theory could play an important role in understanding how states of 'fit' in contingency-based research are actually achieved. This would involve analysis of how the thoughts and actions of organisational participants play a role in adapting management accounting practices to contextual conditions (and how management accounting practices can influence individuals subjective perceptions of those contextual conditions). In this way, psychology theory could be used in contingency-based research to understand how, how well and why individuals in organisations make judgements about adapting management accounting to the organisational context, such as deciding how much change in management accounting is enough.

Although premised on the importance of adapting the organisation to changes in context, research indicates that firms often remain in misfit for prolonged periods (Donaldson, 2001). As such, psychological processes could play a role in influencing individual's responses to changes in context and their ability to adapt management accounting practices to achieve (or not) 'fit'. For example, changes in context could create a situation of cognitive dissonance, where there is a lack of consistency between cognitions about the organisational context and the appropriate behaviours and practices to pursue in that setting, including management accounting practices. This lack of consistency can motivate changes in individual behaviour to reduce cognitive tension, such as changing the management accounting practices so they 'fit' better with cognitions about the organisational context. However, cognitive dissonance theory indicates that individuals may not adapt their behaviour but instead take the more common response of adapting their cognitions (Birnberg et al., 2007). For example, individuals may selectively 'ignore' changes in context in order to

preserve their cognitive consistency, leading to a lack of change in management accounting practices. In this way, cognitive dissonance theory may help to explain how and why individuals seek to adapt (or not) management accounting practices to the organisational context. Other psychological processes, such as the experience of stress, could also play a role. In particular, stress can lead individuals to perceive more uncertainty in their job roles, which can be dealt with (at least in part) by developing certain management accounting practices. For example, Marginson and Ogden's (2005) findings suggest that perceptions of role ambiguity may generate particular budgeting practices, such as a strong commitment to budget targets. As such, the psychological experience of role ambiguity could help to explain why more rigid budgets can be an adaptive response to experiences of higher levels of uncertainty.

What is particularly intriguing is the possible dynamic interplay between management accounting practices and psychological states in processes of adaptation. That is, how management accounting practices influence psychological states and how these psychological states influence the ability of individuals to change and adapt management accounting practices. For example, particular kinds of evaluation and reward systems (e.g., bonuses linked to strict short-term targets) may motivate a focus on the status quo rather than providing incentives for flexibility and adaptation; performance measurement systems may direct individual attention to the wrong (or right) areas making it more (or less) difficult for individuals to identify critical changes in the organisational context; and particular styles of budgeting could block or impede (or encourage) possibilities for developing knowledge and constructing new ideas or concepts that help individuals to be open to and identify important changes in organisational context. In these ways, management accounting practices could influence how open, adaptive and responsive individuals are to changes in the organisational context, and, consequently, influence their motivations for and ability to change management accounting practices to 'fit' those new contexts. This also suggests that an understanding of how management accounting influences adaptation processes is important for contingency theory more generally, as management accounting can influence how managers become aware of and diagnose misfit, and their motivations and ability to remedy it.

Adopting a more dynamic perspective would require a shift in the types of theoretical models and methods used in contingency-based management accounting research. In particular, as a dynamic perspective focuses attention on changes in behaviour *and* changes in management accounting, this indicates a need to develop bi-directional rather than uni-directional causal model forms (Luft and Shields, 2003). This is particularly important in understanding how changes in management accounting can generate recoil, resistance and reverse effects flowing back to influence the operation of management accounting practices (Luft and Shields, 2003; 185). Within studies using survey methods, a shift towards the use of longitudinal rather than cross-sectional designs could prove particularly fruitful (although practically challenging), as it would provide the ability to collect data at different points in time in order to examine empirically the dynamic relations between variables.[8] As will be discussed further in the next section, field studies are particularly well suited for examining the dynamics of the relations between management accounting practices and psychological processes.

6. Bringing the field back in

As noted above, early contingency-based studies collected data using a variety of methods, including the collection of data from the field, yet subsequent research has primarily used surveys and experiments.[9] This is despite the important insights gained from studies that used data collected from the field to examine directly the psychological processes surrounding the design and use of management accounting practices. Importantly, there is no theoretical reason that contingency research employing psychology theory should use one method

[8] For an example of a study using a longitudinal survey design, see Wouters and Wilderom (2008).

[9] I use the term 'field study' to refer to the approach to data collection (method) in a study. Specifically, the situation where the researcher(s) gathers data directly from engagement with the 'field' using different data collection methods, such as interviews, observations of management accounting practices, and/or collection of company documents, for example. The key distinction is that the researcher(s) actively engages with actors in their natural settings, in contrast to the collection of data without contact via Internet or postal surveys, or in the artificial setting of the laboratory. As Ahrens and Chapman (2006) note, method is not the same as methodology, as data collected using methods such as observation or interviews can be used in both interpretive and positivistic research methodologies.

over another, as the choice of research method should depend on the research objective of each study in question. Indeed, within psychology there is a long tradition of using case studies and case histories of individuals as a way to provide rich information about psychological experiences and processes (e.g., Hayes, 2000; Searle, 1999). The limited use of field studies in psychologically-based contingency research in management accounting is consistent, however, with more general trends in management accounting research using psychology theory. In particular, Hesford et al. (2007) show that across 10 major accounting journals during the period 1981-2000, 121 articles were classified as using psychology as a source discipline. Of these 121 articles, the majority used experiments (64, or 52.9%), followed by surveys (35, or 28.9%), with only 7 (5.8%) classified as case/field studies. This is important because it has substantial implications for the types of questions that contingency-based management accounting research can address (Chapman, 1997).

I propose that field studies are particularly well-suited to examining psychological *processes* (in contrast to states) as they provide more scope to observe and analyse the sequence of mental processes leading from management accounting practices to their effects and vice versa (c.f., Birnberg et al., 2007). Surveys, particularly the typical approach of cross-sectional designs, are necessarily restricted to examining psychological states (e.g., the level of role ambiguity) rather than psychological processes (e.g., the experience of role ambiguity, how it is formed, and how it comes to affect performance). And although experiments offer the opportunity to examine processes (for example, see Webb (2004), or more generally see Hall (2010) on process-based experiments), they face the typical limitation of not necessarily reflecting the way in which psychological process unfold in organisations. This can be an important difference, as psychological processes in the 'wild' can take on a very different character to those observed in the laboratory (see, for example, Hutchins (1995) and Lave (1988)).

The advantage of field studies in examining psychological processes is illustrated by a comparison of Hall (2011) and Englund and Gerdin (2015). As noted above, Hall (2011) used cross-sectional survey data to examine the relation between comprehensive performance measurement systems and the

mental states of mental model confirmation and mental model building. In contrast, Englund and Gerdin (2015) draw on very detailed process data collected from intensive engagement with the field to provide many additional insights on the relations between performance measurement systems and mental models. For example, rather than actors having a single mental model of business operations (as conceptualised in Hall (2011)), they show that actors constructed both a 'generalised' mental model of current operations, and a 'specific' mental model about links between particular events and circumstances, and actors used different 'number tactics' depending on which mental model was activated. More importantly, their findings highlight the dynamic interaction between performance measurement systems and mental models. In particular, they show that breakdowns in mental models can lead actors to engage in an intense process of experimenting with and redesigning the performance measurement system itself. So, not only do performance measurement systems influence mental models, but mental models influence performance measurement systems.

Another important advantage of field studies is the ability to examine a broader range of psychological responses emanating from a management accounting practice. This is clearly evident in both Argyris (1953) and Hopwood (1973) where a diverse range of psychological reactions to budgeting and performance evaluation were observed and analysed. More recently, Groen et al. (2012) use a field study to examine the motivational, social and cognitive processes generated from employee participation in the development of a performance measurement system. In particular, they use the theory of planned behaviour to understand how and why participation in the development of a performance measurement system is linked to employee initiative through different psychological processes (attitudes, felt social pressure, and capabilities). As they note, this approach helps to provide a relatively complete explanation for the relation between a management accounting practice (e.g., performance measurement participation) and outcomes (e.g., employee initiative).

Not only would psychologically-based contingency research benefit from greater use of field studies, but field studies could also benefit from more explicit

use of psychology theory. As noted by Luft and Shields (2009), although psychology theory is almost absent from non-laboratory studies, it has considerable potential to increase our understanding of management accounting research using a variety of research methods. For example, Bourmistrov and Karrboe (2013) examine how the use of beyond budgeting practices influences the transition of decision makers from 'comfort' to 'stretch' to 'panic' zones. A comfort zone, for example, is conceptualised as a decision maker experiencing a relatively high degree of alignment between mindset and behaviour whereas in a panic zone there is a strong misalignment between mindset and behaviour. Cognitive dissonance theory would have been particularly fruitful here because it focuses explicitly on consistency between cognitions and behaviour. For example, the comfort zone is analogous to a state where cognition and behaviour is consistent, whereas the panic zone is analogous to a state of cognitive dissonance where cognition and behaviour is inconsistent. The use of cognitive dissonance theory would have provided a stronger theoretical explanation, for example, for why decision makers in the 'stretch' zone seek out new sources of information, because it would predict that in a state of cognitive dissonance people can seek new information to increase their ability to behave in ways consistent with the 'stretch' mindset.

7. Management accounting in the context of other accounts and organisational processes

There is a tendency within contingency-based management accounting research to focus on the causes and effects of management accounting practices in isolation from the plethora of other accounts and organisational processes existing in organizations. As Hopwood (1983: 298) argued over 30 years ago, 'the accountant's Account is merely one of the many that attempt to make visible and salient particular aspects of organizational life.' Yet, despite numerous observations to support this argument, much management accounting research, including psychologically based contingency research, continues to focus on the use of only the accountant's account with little attention focused on other types of accounts individuals may use (Hall, 2010). This reflects the predominant

approach in contingency-based research on examining a reduced set of context-structure variables and their relationship with performance, in contrast to a more holistic approach examining many contextual and structural variables simultaneously (Gerdin and Greve, 2004; Grabner and Moers, 2013). In addition, as noted above, it also reflects the limited use of field studies where researchers can more readily focus on understanding individual responses to a broad and complex set of stimuli rather than a limited set of context and management accounting variables. There also appears to be a tendency to narrow focus prematurely, for example, where the holistic approaches to the analysis of budgets evident in Argyris, Hopwood and Otley were followed by a stream of studies examining a particular and very focused aspect of the budgeting process in the form of reliance on accounting performance measures in performance evaluation. Whilst different research strategies have their own particular strengths (e.g., breadth versus depth and precision), it appears much could be gained from a stronger focus on the wider information environment within which management accounting practices operate in organisations. This is particularly important where there are likely interdependencies between a particular management accounting practice and other management accounting practices and/or other types of accounts (Grabner and Moers, 2013).

The advantage of this approach becomes evident through a closer examination of the different results reported by Hopwood (1973) and Otley (1978). As noted above, the different findings of the two studies are typically thought to arise because of differences in the extent to which accounting performance measures are a complete representation of managerial performance in cost versus profit centres. That is, the focus in explaining the different psychological and behavioural effects is located at the level of the accounting performance measures (the 'accountants account') and how efficacious they are in different settings.

However, Otley (1978; 143) also argued that the different results could relate to the extent to which the superior is supportive of the subordinates' efforts to meet the budget target. This explanation is focused on the organisational processes surrounding the use of accounting performance measures rather than the measures themselves. In particular, drawing on

insights from expectancy theory, Otley (1978) noted that in the organisation he studied, the group staff was highly supportive of unit managers, thus helping those managers evaluated under a budget constrained evaluative style to believe they could meet their budgets. This is important because tensions from the use of accounting performance measures typically only arise for subordinates when they are evaluated under the budget constrained style *and* when they do not (or believe they are likely to not) meet the budget target. Argyris also details how a feature of the budgeting system observed in the manufacturing plants was that budget supervisors could only succeed by finding errors, weaknesses and faults existing in the plants and then reporting those failures to superiors (in contrast to working with plant managers in a supportive way). Hopwood (1973; 188-189) presents even more convincing evidence regarding the importance of supervisory support:

> 'only the Profit Conscious supervisors were also seen as maintaining a warm and friendly environment which was conducive for mutual trust and respect. Without the moderating effect of these considerate attitudes towards the subordinate and the supportive organisational climate, a concern for accounting information was seen as threatening and stressful, serving as a trigger for behaviour which was potentially dysfunctional for the organisation as a whole'.

Here Hopwood explicitly notes how the supportiveness of the supervisor, along with the level of concern with accounting information, are both seen to influence the psychological responses from subordinates. Future studies, however, have focused only on the accounting part of the explanation (the extent of reliance on accounting performance measures and its completeness in different settings) rather than the surrounding organisational processes, such as the way the supervisor supports the subordinate in meeting budget targets.

Beyond the budgeting context, psychology theory could help to understand whether and how the effects of management accounting practices vary in the presence of multiple sources of information, particularly how individuals make choices from amongst the many different accounts and

measures typically available in organisations. For example, Lipe and Salterio (2000) use psychology theory to predict and show how managers tend to rely on the common rather than unique measures in a balanced scorecard when it is used to make performance evaluation judgements. This finding is important because contingency-based studies often rely on arguments about the allegedly beneficial effects of nonfinancial measures (which are also typically the unique measures) via the provision of better feedback resulting in more learning and improved decision making. However, such processes and effects are not likely to eventuate if superiors (and, consequently, their subordinates) focus on the common measures only. As such, it is important to consider how managers make use of the wider information available to them and the potential role of psychology theory in understanding these choices and processes.

Only examining one account (or characteristic thereof) also ignores how in organisational settings there is typically a need to combine different accounts and/or respond to conflicts between them (e.g., Englund and Gerdin, 2015). Combining and/or managing conflicts between accounts is particularly important for organisational level contingency-based studies because it is the set of management accounting practices (and other information and organisational processes) that plays a role in influencing organisational outcomes, not only the single management accounting practice typically the object of study. [10] In this context psychology theories of conflict can be useful in understanding reactions to the potential conflicts between different types of accounts. In particular, if different accounts can generate cognitive conflict, this has the potential to be productive, whereas the generation of affective conflict is generally unproductive (Chenhall, 2004). The presence of other accounts may also play a role in generating (or alleviating) conflicting or ambiguous representations of individual's responsibilities that have been show to create a range of dysfunctional outcomes like stress and dissatisfaction (c.f., Birnberg et al., 2007). Other accounts also play a role in shaping individual's perceptions of their roles and responsibilities, yet it is unclear how they interact with management

[10] This issue is less of a concern at the individual level of analysis because individual-level outcomes are only influenced by those management accounting practices an individual is necessarily exposed to, rather than the total set of management accounting practices in operation in the organisation.

accounting practices to influence these psychological processes. Importantly, unless the role of these other accounts is random, then they are likely to have a systematic influence on the relation between management accounting practices and relevant outcomes that needs to be taken into account.

8. Expanding the range of psychology theory – the role of emotions

Existing research uses psychology theories related to cognition, motivation and social psychology but has given insufficient attention to the potential role of emotions (Birnberg et al., 2007; Luft and Shields, 2009). This is important because emotions interact with cognition, motivation and social processes. It also resonates with a further overlooked feature of both Argyris (1953) and Hopwood (1973) regarding how management accounting practices affect and are affected by the feelings of employees, such as their emotional states. For example, Argyris (1953) is replete with reference to all manner of (typically negative) emotional states of employees in reaction to dealing with budgeting, such as resentment, suspicion, fear, hurt, anxiety, frustration, aggression, hostility, apathy, and indifference. Similarly, Hopwood (1973) notes a variety of feelings expressed by employees in response to the use of budgets in performance evaluation, such as self-esteem, anxiety, frustration, tension, and anger. Although not examined explicitly, more recent studies also point to the important role of emotions in the operation of management accounting practices. For example, Marginson and Ogden (2005) discuss how budgets can provide managers with a sense of comfort and socioemotional security, suggesting a positive emotional role for budgets where individuals enact job roles generating significant uncertainty. In contrast, as noted above, Bourmistrov and Kaarboe (2013) discuss how budgets can play a role in stretching individuals too far, resulting in a 'panic' zone characterised by feelings of anxiety and discomfort.

Developing a stronger focus on emotions in contingency-based management accounting studies also resonates with wider developments in accounting research. For example, studies of decision-making have started to examine the effect of cognition and emotion in the context of capital budgeting

decisions (Kida et al. 2001), highlighting the importance of emotional states because individuals rarely make decisions devoid of feeling (Ding and Beaulieu, 2011). For example, Moreno et al. (2002) show how managers' capital budgeting decisions are influenced by both financial data and consideration of affective reactions, and Farrell et al. (2014) examine how incentive contracts can be used to mitigate the documented costly influence of some emotions by inducing more deliberate consideration of both economic and emotional factors. More broadly, recent studies have stressed the need for accounting scholars to focus on emotions as a 'vital and permanent aspect of the workplace', where emotions shape and are shaped by organizational processes (Guenin-Paracini, Malsch and Paille, 2014: 265). In this way, accounting can influence individuals' passions and feeling, not only their intellectual and reasoning processes (Boedker and Chua, 2013).

Emotions can be considered as a subset of a broader class of affective phenomena, that is, those involving feelings (Frederickson, 2001). Emotions typically begin with an individual's assessment of the personal meaning of a particular event, which triggers a cascade of emotional responses. These emotional responses are typically conceptualised as more intensive affective states (Ding and Beaulieu, 2011), often classed into discrete categories of emotions, such as anger and anxiety, or positive emotions such as joy, interest, contentment, and pride. Positive emotions in particular have the potential to broaden employees' action repertoires and help them to develop physical, intellectual, social and psychological resources (Frederickson, 2001). As contingency-based research is often focused on explaining particular individual and organizational outcomes (often performance) with reference to individual and organizational actions, then the potential relations between management accounting practices, emotions and actions is very important.

Drawing from Argyris (1953) in particular helps to distinguish two different processes regarding the links between emotions and management accounting practices. One, management accounting practices, such as budgeting, can create emotional responses because they often play a role in adjudicating on the performance of employees. For example, a comparison of budget to actual performance, when revealing a negative deviation, can generate feelings of

failure, or, when revealing a positive deviation, can generate feelings of joy and contentment. Similarly, strong emotional reactions are likely where an individual's performance is compared to peers or some other referent group, such as when an organisation uses relative performance evaluation (e.g., Matsumara and Shin, 2006). In this way, management accounting practices could form a central part of the information set from which inferences about the performance of individuals and organizations and the adequacy thereof are formed. As Miller and Power (2013) note, accounting can play a decisive role in evaluating the performance of individuals and organizations, particularly in determining failings and failures.

Two, the material artefacts of management accounting practices, such as written reports, documents and ledgers, could also act to reinforce emotional states. As Argyris (1953: 104) noted in the context of a foreman's failure to meet budget targets, 'the entire incident is made permanent and exhibited to the plant officials by being placed in some budget report which is to be, or has been, circulated through many top channels.' This points to the role of management accounting practices in not only creating emotional responses (through indicating, in this case, a 'failure') but also reinforcing them. This reinforcement appears to operate in two ways. One, the material artefact, such as the budget report, provides a direct visual reminder of the success or failure to the individual whose performance the management accounting practice is directed towards. Two, as the budget can circulate to other organizational members (e.g., the 'top channels), it can play a role in displaying the failure or success of the individual (or team) to others in the organisation. This reflects the way in which the material artefacts of accounting can aid the circulation of emotion in organisations (Boedker and Chua, 2013).

Hopwood's findings also speak to management accounting practices and emotions playing an important role in the wider functioning of organisations. Hopwood (1973, 76) stated that the 'personal feelings of frustration and tension engendered by the Budget Constrained style of evaluation were not merely isolated within the emotions of the individual cost centre heads [but also] the potential for the individual anxieties to exert a pronounced effect on the wider pattern of interpersonal relationships within the company.' This observation not

only supports the way management accounting practices can influence an individual's emotional state, but indicates how emotional states can 'spill over' and influence the interactions of individuals with others in the organisation. The role of management accounting practices in influencing interpersonal dynamics via their effect on emotional states seems particularly important for contingency-based studies at the organizational level of analysis. This is because explaining the effect of management accounting practices on organizational outcomes can no longer be theorised to occur through the aggregation of individual level emotional states and actions, as it must also take account of how management accounting practices influence interpersonal (group) dynamics and the implications of these dynamics for organizational outcomes.

Existing emotional states may also act to influence the operation of management accounting practices. Argyris (1953) is again instructive here, particularly the observation that individuals can project their emotions and feelings onto budgets and other management accounting practices. In particular, Argyris (1953: 106) notes how budgets can be a 'medium through which the boss could *express* the fact that he was upset' (emphasis in original). This suggests management accounting practices could provide a vehicle through which the existing emotions and feelings of those participating in those practices could be expressed. This potential role resonates with recent research highlighting the expressive character of performance measurement systems and how they can play a role in the display of values, beliefs and emotions in organisations (Chenhall, Hall and Smith, 2015).

This discussion raises interesting questions about the role of emotions in contingency-based management accounting research.[11] At the broadest level, it invites analysis of the relations between management accounting practices and emotional states, and how these emotional states influence individual, group and organisational processes. For example, how does management accounting's role in adjudicating on performance and reminding and circulating such performances throughout the organisation affect an individual's emotional responses? What characteristics of the design and operation of management

[11] This discussion is suggestive only of possible directions regarding the role of emotions in contingency-based management accounting research, with future research needing to specify emotional concepts and psychology theories in greater detail than is available here.

accounting practices generate negative versus positive emotional responses? The role of management accounting practices in generating positive emotional states seems particularly fruitful.[12] For example, drawing on Frederickson (2001), studies could investigate how management accounting practices can help employees to develop broader action repertoires and resources by promoting positive emotional states. Regarding the link between emotions and outcomes, central to these analyses will be efforts to understand how emotions relate to (or are part of) psychological processes influencing behaviour, such as motivational processes involving the direction, intensity and persistence of effort, and mental processes involving higher-order reasoning, decision making and learning. For example, positive emotions like joy, interest and pride can generate actions such as creativity, exploration and striving (Frederickson, 2001) central to scholars seeking to understand how management accounting practices link to abilities for problem solving, for sustained motivation and effort, and for creativity (e.g., Adler and Chen, 2011).

9. Conclusion

I have drawn on prior research to analyse the ways in which psychology theory has been employed in contingency-based management accounting research. Drawing on this analysis, I identified and discussed five ways to develop the use of psychology theory in contingency-based management accounting research, which focused on developing stronger linkages between individual and organisational-level studies, adopting a more dynamic perspective, a stronger use of field studies, examining management accounting in the context of other accounts and organisational processes, and expanding the range of psychology theories to include the role of emotions. These approaches are aimed at improving the way psychology theory is employed in contingency-based management accounting research, but may also offer insights into the use of theory and theorising in contingency-based management accounting research more broadly. Given the long and distinguished role of contingency-based

[12] See Marginson et al. (2014) for a discussion of the importance of examining the ability of management accounting practices such as performance measurement to generate positive psychological states.

management accounting research, the ultimate aim is to foster research that provides greater insights into the functioning and effects of management accounting practices in organisations.

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Figure 1: Model forms in psychology-based contingency research in management accounting

Panel A: Example of a single level model – organization level

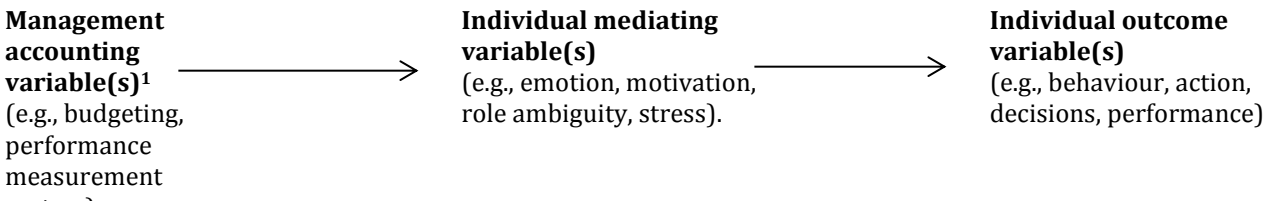
Contingency variable(s)
(e.g., environmental uncertainty, strategy)

Management accounting variable(s)[1]
(e.g., budgeting, performance measurement system)

Organisational outcome variable(s)
(e.g., financial performance, non-financial performance)

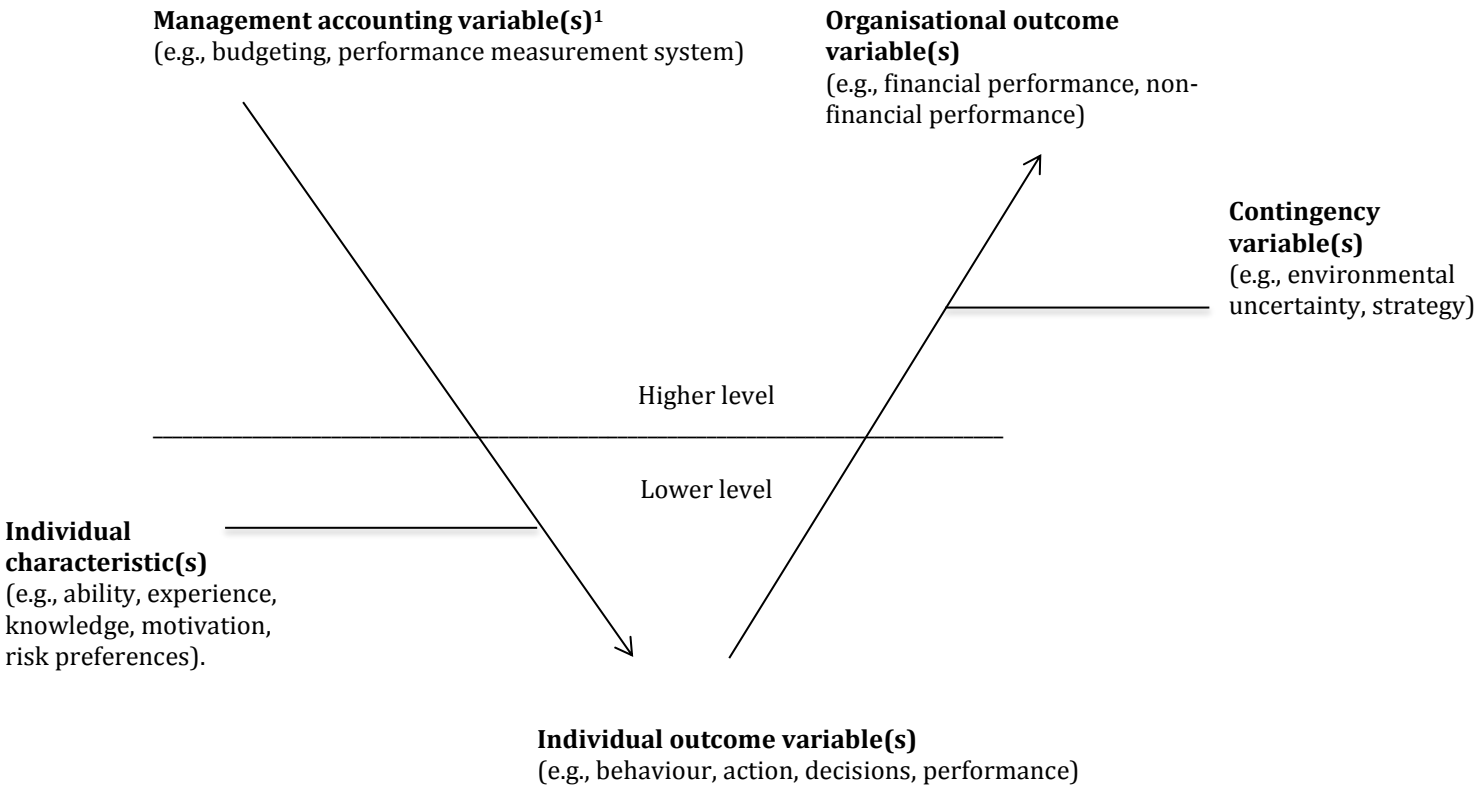
1 - the management accounting variable(s) in this model varies at the organizational level (e.g., corporate balanced scorecard) or subunit level (e.g., divisional balanced scorecard).

Panel B: Example of a single level model – individual level



1 - the management accounting variable(s) in this model varies at the individual level. This can occur in two ways. One, the management accounting practice operates at the individual level, e.g., an individual balanced scorecard. Two, the management accounting practice operates at the subunit/organizational level but the variable of interest is individual perceptions or beliefs about particular characteristic(s) of the higher-order management accounting practice (e.g., individual perceptions of how complete, subjective, comprehensive, participative a management accounting practice is).

Panel C: Example of a cross-level model



1 - the management accounting variable(s) in this model varies at the organizational level (e.g., corporate balanced scorecard) or subunit level (e.g., divisional balanced scorecard).

The top-down arrow represents how organizational management accounting has a varying effect on individual outcomes because of some difference(s) in individual managers that causes them to respond differently to the same management accounting information (see Luft and Shields, 2003; 197).

The bottom-up arrow represents how individual behaviours, actions and/or decisions have a varying effect on organizational outcomes because of differences in higher-level variables such as the organizational context (see Luft and Shields, 2003; 199).